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ABSTRACT

School psychology, defined as the study and application of psychological principles to the educational setting, encompasses the study of learning and cognition, development, social behavior, individual differences, and measurement and statistics. The purpose of this paper is to provide an historical account of the origins of educational psychology with a focus on its early history and major contributors. Emphasis is placed on the importance of the notion of individual differences, the paradigm which has functioned as a major impetus in the development of intelligence testing. Major contributors discussed are: Francis Galton, Granville Stanley Hall, Arnold Gesell, Lightner Witmer, William James and James McKeen Cattell. It is concluded that the development of the intelligence test was largely a function of the zeitgeist of American society. The lack of innovations made in the assessment of intelligence is seen as a vestige of functionalism in that the currently used instruments meet the minimum needs of the individuals using them--they have great pragmatic value for labeling and placement of individuals into special programs. Contains six references. (JBJ)

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Intelligence Testing and the Emergence of School Psychology

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Running Head: THE EMERGENCE OF SCHOOL PSYCHOLOGY

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Intelligence Testing and the Emergence of School Psychology

School psychology, a term which is often used interchangeably with educational psychology, is defined as the study and application of psychological principles to the educational setting. School psychology encompasses the study of learning and cognition, development, social behavior, individual differences, and measurement and statistics. Through the application of psychological principles, the function of educational psychology has been to serve as a selective conduit between the academic discipline of psychology and the applied field of education (Walberg & Haertel, 1992). The purpose of this paper is to provide the reader with an historical account of the origins of educational psychology. Focus will be placed upon the early history of educational psychology and its major contributors. An historical account of the introduction of behavioral, humanistic, and cognitive theories to this field during the mid to late 1900's is therefore beyond the scope of this paper. Additionally, emphasis will be placed upon the importance of the notion of individual differences, the paradigm which has functioned as a major impetus in the development of intelligence testing.

Although it is difficult to ascertain precisely the time at which educational psychology became recognized as a specialty

within the psychological sciences, there appears to be much agreement among historians that its development was fostered primarily within the United States during the late 19th century. It also appears to be generally accepted that the development of this discipline is rooted within the historical context of intelligence testing and compulsory schooling.

In an historical review of the field of educational psychology, Walberg and Haertel (1992) note that courses in this area were offered at universities as early as 1839. What was later to emerge as a science devoted toward the application of psychological principles to education, educational psychology would be influenced by several forces of late 19th century philosophy and science, the most prominent of which were paradigm-driven theories regarding variability among human abilities.

Individual differences, according to Walberg and Haertel (1992), became a systematic field of study with the publication of Francis Galton's (1869) book Hereditary Genius. A nativist in his orientation, Galton described a range of human abilities, introduced the nature versus nurture debate, and asserted that intelligence has as its basis a hereditary component. Galton was the first researcher to systematically measure intelligence and

to use correlational statistics in the field of psychology. From this methodology he provided evidence that eminent individuals tended to bear intelligent offspring and therefore concluded that intelligence has as its underpinnings genetic quality. Later, Goddard revised his viewpoint, acknowledging the importance of environmental forces in the molding of intelligence and proposing that while it is largely heritable, human ability should be nurtured with proper education. These ideas would later influence the work of American psychologists such as Granville Stanley Hall, Arnold Gesell, Lightner Witmer, and James McKeen Cattell, whose philosophical orientations were grounded in the tenets of Darwinian theory. We will now briefly examine the contributions of these individuals to the field of educational psychology as described in Walberg and Haertel (1992) and Fagan (1992).

Late 19th and early 20th century American society embraced the notions of "survival of the fittest" and variability within species as explanations of individual achievement. These Darwinian principles were incorporated into American psychology by the functionalists, whose interests included pragmatic applications. William James argued that psychology should embrace all aspects of human existence and should employ the

techniques found to be most effective (Hergenhahn, 1992). Accordingly, James delivered a series of lectures to teachers conveying his views of the mind and the importance of choice, purpose, and habit. James's eclecticism epitomized functionalism in America and, combined with the efforts of others, paved the way for the application of psychological principles to the field of education.

G. Stanley Hall, another functionalist, was instrumental in the development of the child study movement that was to be the precursor of modern-day school psychology. Hall's work focused primarily on the use of questionnaires to investigate the common problems of school children. According to Fagan (1992), as a result of his work, Hall helped to invent the "normal" child. With the introduction of compulsory schooling during the 1890's, the need for identifying specific handicaps in children grew, as did the proliferation of specialized staff to meet this need. As Fagan affirms:

> The combination of compulsory attendance, large numbers of immigrant children, and poor child health and hygiene forced on the schools a large segment of the population that heretofore had been only occasionally, if ever, in regular attendance. (p. 236)

Originally, school staff did not possess normative data to use for discriminating between, for example, children of average ability and those with cognitive impairments. Rather than depending on intelligence tests to make such discriminations, Hall's methods included diary descriptions, individual and group observations, longitudinal observations, and laboratory studies (Fagan, 1992). While not directly involved in the development of intelligence tests, Hall's child study techniques provided much information in regard to the qualitative nature of child development.

Fagan (1992), in contrasting the contributions of the child study-oriented psychologists and those of the clinical-oriented psychologists, suggests that Lightner Witmer's concept of clinical psychology served to bridge the gap between typical and atypical conceptualizations of the child. Witmer influenced the development of special education and teacher training, emphasizing the teacher's role in the diagnostic process and proposing that environmental changes could be made toward fostering childrens' academic development. For these reasons he is most often mentioned as the originator of school psychology. The first person to actually hold the title of school psychologist was Arnold Gesell, who was also trained as a

physician (Fagan, 1992). Employed from 1915 to 1919 by the Connecticut State Board of Education, Gesell's primary responsibility was to perform evaluations and make recommendations for exceptional children. Gesell was a member of the child study movement; his methods included questionnaire usage and observations of attributes such as physical coordination and language and academic development. Physical attributes of children were often overemphasized during this period due to the prevailing belief that poor genetic endowment in turn led to poor physical condition. Physical characteristics provided convenient indices of measurement in the absence of well-researched intelligence tests, and it is not unlikely that during this time many children were inappropriately labeled as "feebleminded" on the basis of physical characteristics alone.

As the need for more normative data regarding childrens' ability levels grew, research in the field of educational psychology increased, in seemingly exponential fashion. Much of this research generated archetypal forms of the modern-day intelligence tests (We will discuss how little intelligence tests have changed since the earlier times in the latter part of this paper), thus providing means by which school personnel could identify handicaps. Henry Herbert Goddard, one of Hall's

students, developed the English translation of the Binet-Simon scale and found it to be effective for identifying and classifying degrees of retardation in children. As the child study movement began to wane and popularity of the Binet-Simon scales grew, separation of impaired students from mainstream classrooms as a function of intelligence test scores increasingly became accepted practice. Perhaps due in large part to social Darwinism, however, remedial programs such as special education were not in the mainstream of schooling due to the belief that child anomalies were part of the natural social order and that society would benefit more from the education of the more "fit" children (Fagan, 1992).

James McKeen Cattell, who coined the term "mental test" in 1890, utilized Wundt's experimental principles and extensions of Galton's anthropometric tests toward advancing mental testing. Strongly influenced by Galton, Cattell was convinced that variations in mental processes could be objectively measured by psychophysical methods. As described in von Mayrhauser (1992), Cattell defined the accuracy of his tests in relation to other tests and hence, equated validity with reliability. Cattell proposed a form of "mental energy" as underlying all mentality and argued that it is predictive of academic abilities. These

theories were not supported through the replication method; In fact, one of Cattell's own students, Clark Wissler, used correlational methods to demonstrate the tests' low correlation with academic performance.

While largely unsuccessful in a pragmatic sense, Cattell's idea of a unitary form of mentality was reified by Charles Spearman, an Englishman who enhanced the reliability of mental testing by utilizing the probable error equation. This statistical correction accounted for the errors inherent in a finite set of observations, which he believed obscured what he called the "general intelligence", or "g" (von Mayrhauser, 1992). As it was a convenient model for conceptualizing intelligence, Spearman's unitary model was largely embraced in the United States. When Binet's scale was translated by Goddard, it was reinterpreted to provide mental age and in turn, to provide an index of mentality with reference to educational fitness. This was in contrast to Binet's ideal use of mental tests, in the sense that he refused to define the abilities his test measured as other than adaptability to normatively measured levels on criteria that were socially relevant (von Mayrhauser, 1992). In short, Binet was opposed to the g concept of intelligence because he believed that it encouraged examiners to disregard the complex

nature of intelligence which could not be explained by a mere number.

The concept of a unitary intelligence continued to be strengthened in the United States. Lewis Turman coined the term IQ, or intelligence quotient, to serve as an index of general ability. The deterministic beliefs that general ability is largely inherited and that instruction should be geared toward the needs of the superior students continued to serve as guiding principles in education, and to a lesser degree, these beliefs remain present among educators today. However, with more advanced theories of intelligence which take into account the variety of abilities contained within each individual's repertoire, in addition to advances in standardization technology, educational psychology has made great strides toward the understanding and measurement of intelligence - or has it? The remainder of this paper will briefly examine advances, or lack thereof, in intelligence testing since the turn of the century.

In a review of the field of intelligence testing, Robert Sternberg (1992) argues that very little, if any, substantive changes in cognitive and group achievement tests have occurred over the last 100 years. He compares it with advances in the

automobile since the Model T, stating metaphorically that "like the automobile, the test of today takes one to pretty much the same places as did its progenitors" (p. 134). The reason for the minuscule changes in intelligence tests, he contends, is that test development is a market-driven industry which is primarily concerned with profits as opposed to researching new methods of assessment. According to Sternberg, the technology of testing has alienated itself from the science of psychology, failing to recognize recent advances in the understanding of intelligence. In fairness, however, Sternberg does acknowledge the fact that alternate models of intelligence, such as his own triarchic theory, are not easily measured:

> [My] full test is quite long (3 hr) by current standards and thus would be likely to sell only to those with a serious interest in broad intellectual assessment. Regrettably the publisher is not currently pursuing further piloting and standardization of the test. (p. 137)

The above quotation epitomizes the current status of the field of intelligence testing. Publishers of tests are currently functioning as leaders of the testing community and the paradigms contained within it as opposed to assuming the role of "follower" of scientific progress. Sternberg (1992) asserts that the

underlying reason for this is the fact that currently available tests serve to maintain the status quo of the educational system, that is, they provide school psychologists and administrators with the necessary tools for conforming to legal mandates such as special education disability criteria. This is unfortunate to the school psychologist who wishes to base his or her decisions on a variety of measures, such as social interaction skills, patterns of thinking and learning styles, and creativity of the individual. While the currently available tests provide measures of cognition, they do not tap into creative or intrapersonal skills of the testee; two important predictors for success as proposed by Sternberg.

In conclusion, the four articles reviewed herein have certainly made it clear that the development of the intelligence test has, as with all other scientific advances, largely been a function of the zeitgeist of American society. The lack of innovations made in the assessment of intelligence is perhaps a vestige of functionalism in that the currently used instruments meet the minimum needs of the individuals using them - they have great pragmatic value for labeling and placement of individuals into special programs. Until a major anomaly is discovered in the current conceptualizations of intelligence and a paradigm

shift occurs, this author does not foresee any substantive changes in the way intelligence is measured. With recent advances in brain mapping, magnetic resonance imaging, positron-emission tomography, and genetics (among many other technologies), perhaps new concepts of intellectual processes will be formulated and the intelligence testing community will
realize just how archaic the current methods are. Only time will tell, and, suffice it to say, many school psychologists are waiting.

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